



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,044	03/01/2004	Chung-Hui Chen	TSMC2003-0817(N1280-00070	1265

54657 7590 08/26/2005

DUANE MORRIS LLP
IP DEPARTMENT (TSMC)
4200 ONE LIBERTY PLACE
PHILADELPHIA, PA 19103-7396

EXAMINER

NGUYEN, LONG T

ART UNIT PAPER NUMBER

2816

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/791,044

Applicant(s)

CHEN, CHUNG-HUI

Examiner

Long Nguyen

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The objection to the drawings have been overcome based on the replacement drawings.
2. In this office action, the indication of allowability to claims 4, 9, 14 and 19 in the last office action is withdrawn and these claims are rejected for the reasons below.

Claim Objections

3. Claims 1-24 are objected to because of numerous informalities:
 - Claim 1, line 8, "for" should be deleted.
 - Claim 1, line 17, "or" should be changed to --and--.
 - Claim 1, line 17, "modules" should be changed to --module--.
 - Claims 2-6 are objected because they include the informalities of claim 1.
 - Claim 2, line 2, "input" should be changed to --signal--.
 - Claim 2, line 3, "input" should be changed to --signal--.
 - Claim 4, line 2, after "second signal", --passing module-- should be inserted.
 - Claim 4, line 3, "the passed input" should be changed to --the respective passed input of the first and second pass gates--.
 - Claim 6, line 4, "input" should be changed to --signal--.
 - Claim 7, line 13, "or" should be changed to --and--.
 - Claim 7, line 13, "modules" should be changed to --module--.
 - Claims 8-11 are objected because they include the informalities of claim 7.
 - Claim 9, line 2, after "second signal", --passing module-- should be inserted.

Claim 9, line 3, "the respective passed input" should be changed to --the respective passed input of the first and second pass gates--.

Claim 10, line 5, "clock signal" should be changed to --clock input--.

Claim 11, line 4, "signal" should be changed to --input--.

Claim 11, line 6, "signal" should be changed to --input--.

Claim 12, line 30, "or" should be changed to --and--.

Claim 12, line 30, "modules" should be changed to --module--.

Claims 13 and 14 are objected because they include the informalities of claim 12.

Claim 14, line 2, after "second signal", --passing module-- should be inserted.

Claim 14, line 3, "the passed input." should be changed to --the respective passed input of the first and second pass gates--.

Claim 15, line 24, "or" should be changed to --and--.

Claim 15, line 24, "modules" should be changed to --module--.

Claims 16-20 are objected because they include the informalities of claim 15.

Claim 19, line 2, after "second signal", --passing module-- should be inserted.

Claim 19, line 3, "the passed input" should be changed to --the respective passed input of the first and second pass gates--.

Claim 21, line 17, after "second signal", --passing module-- should be inserted.

Claim 21, line 18, "the passed input" should be changed to --the respective passed input of the first and second pass gates--.

Claim 22, line 13, after "second signal", --passing module-- should be inserted.

Art Unit: 2816

Claim 22, line 14, "the respective passed input" should be changed to --the respective passed input of the first and second pass gates--.

Claim 23, line 28, after "second signal", --passing module-- should be inserted.

Claim 23, line 29, "the respective passed input" should be changed to --the respective passed input of the first and second pass gates--.

Claim 24, line 22, "herein" should be changed to --wherein--.

Claim 24, line 22, after "second signal", --passing module-- should be inserted.

Claim 24, line 23, "the passed input" should be changed to --the respective passed input of the first and second pass gates--.

Appropriate correction to above informalities is required so that the claims are clear.

Note that claims 2-6, 8-11, 13-14 and 16-20 are also objected to because they include the informalities of claims 1, 7, 12 and 15, respectively.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7-9, 15-19, 21, 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki (US 5,081,373).

With respect to claims 1, 2, 4, 7, 9, 15-17, 19, 21, 22 and 24, Figure 1 of the Suzuki reference discloses a flip-flop, which includes: a first pass gate (111); a clock signal (\emptyset) and an inverted signal ($\emptyset/$) of the clock signal (\emptyset); an input (DI); a second pass gate (121); a first signal

Art Unit: 2816

passing module (131, 141); a third pass gate (1231); a second signal passing module (132, 142); a fourth pass gate (113); and a driver module (inverter 151); wherein at least one of the first and the second signal passing modules is a NAND gate for receiving a flag signal (PST) and a respective passed input (outputs of 111, output of 121) passed by the first and second pass gates (i.e., the combination of AND 131 and inverter 141 is a NAND gate, and the combination of AND 132 and inverter 142 is also a NAND gate when signal RST is not used so 141 and 142 are inverters, see Col. 8, lines 12-29). Note that although the symbol of the tri-state inverters 111, 121, 123 and 113 shows only one clock (either ϕ or $\phi/\$), however, the each of the tri-state inverter is controlled by both of the clock signals ϕ and $\phi/\$ because the detail of the tri-state inverter must be have a transistor that is controlled by clock ϕ and another transistor controlled by the clock $\phi/\$ (see Figure 2 of U.S. Patent 5,654,659 issued to Asada for evidence that the symbol of a tri-state inverter shown only one clock, but the detail of the tri-state inverter also including the inverted clock).

Note for claims 3, 8 and 18, because these claims are indefinite as discussed above, so if passing modules (NAND gates, recited in the respective independent claims) are considered to be inverters, then the NAND gates for the passing module of the prior art also meet the limitation that the passing modules are inverters.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 6, 10-14, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (USP 5,081,373) in view of Weste et al. (Principles of CMOS VLSI Design: A Systems Perspective, 1993, Addison-Wesley Publishing Company, 2nd edition, page 91).

With respect to claims 5, 6, 10, 11 and 20, the flip-flop in Figure 1 of Suzuki meets all the limitations of these claims except that each of the first to fourth pass gates comprises a PMOS transistor and an NMOS transistor connected in parallel. However, the Weste et al. discloses that a tri-state inverter is easily constructed by cascading a transmission gate with an inverter (see Figure 2.37(a), lines 1-2 of paragraph 2.7). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to implement each of the tri-state inverters (111, 123, 121, 113) in Figure 1 of Suzuki by cascading a transmission gate with an inverter as taught in Figure 2.37(a) of Weste et al. for the purpose of easy and simple in constructing the flip-flop circuit. Thus this modification/combination meets all the limitations of these claims, i.e., each of the first to fourth pass gates 111, 121, 123 and 124 comprising a PMOS transistor and an NMOS transistor connected in parallel (i.e., the PMOS and NMOS transistors of the transmission gate that is used to cascade with inverter to implement the tri-state inverter as taught by Weste et al.). Note that, because each of the tri-state inverters in Figure 1 of Suzuki operates as an inverter when a Low logic signal is applied to the control terminal of the tri-state inverter and the tri-states inverter is in tri-state when a Hi signal is applied to the control terminal of the tri-state inverter, so the PMOS transistor of the first and fourth pass gates (111 and 113) is controlled by the clock signal ϕ (because a logic Low signal of the clock signal ϕ turns on the PMOS transistor) and the NMOS transistor of the first and fourth pass gates (111 and 113) is controlled by the inverted clock signal ϕ' (because when clock ϕ = Low, then

Art Unit: 2816

inverted clock ϕ = Hi to turn on the NMOS transistor); and the NMOS transistor of the second and third pass gates (121 and 123) is controlled by the clock signal ϕ (because the tri-state inverters 111 and 113 passing the input in complementary manner with the tri-state inverters 121 and 123, so when clock signal ϕ = Lo for the tri-state inverters 111 and 113 to pass the signal, then the clock signal ϕ = Lo controlled the gates of NMOS transistors of tri-states 121 and 123 to turn off the NMOS transistors of tri-states 121 and 123; and vice versa, when the tri-states 111 and 113 are in tri-state mode when clock signal ϕ = Hi, and the logic Hi of the clock signal ϕ turns on the NMOS transistors of tri-state inverters 121 and 123 so that tri-state inverters 121 and 123 pass the signal) and the PMOS transistor of the first and fourth pass gates (121 and 123) is controlled by the inverted clock signal ϕ (due the tri-state inverters 111 and 113 passing the signal in complementary manner with the tri-state inverters 121 and 123 for similar reasons as discussed).

With respect to claims 12-14 and 23, these claims are rejected for the same manner as discussed in the modification of claims 5, 6, 10, 11 and 20, i.e., the first to fourth pass gates, the first and second signal passing modules, the driver are read from Figure 1 of Suzuki in the same manner as discussed in 102 rejection, and the PMOS and NMOS transistors of each of the first to fourth pass gates are from the transmission gate of Figure 2.37(a) of Weste et al. as discussed in the 103 rejection of claims 5, 6, 10, 11 and 20.

Response to Arguments

8. Applicant's arguments filed on 6/29/05 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2816

Conclusion

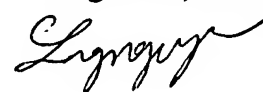
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Long Nguyen whose telephone number is (571) 272-1753. The Examiner can normally be reached on Monday to Friday from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached at (571) 272-1740. The fax number for this group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 25, 2005



**LONG NGUYEN
PRIMARY EXAMINER**